5.5 Find domain and range of functions.

1. State the domain and range of the following relation. Is the relation a function?

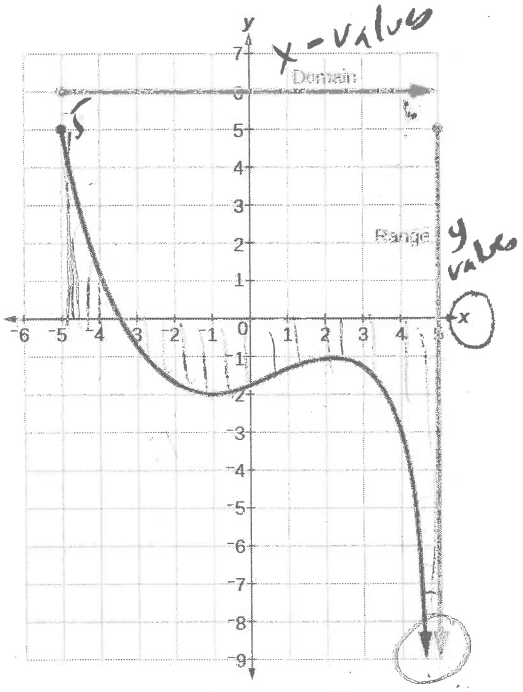
{(2, –3), (4, 6), (3, –1), (6, 6)}

It is **a function. Every** x **goes to only one** y**. Every** 1st element **or** domain value **is different.**

To write the domain, list all the x-values (in "squiggly" or curly brackets), without duplication.
To write the range, list all the y-values, without duplication.

Domain {2, 4, 3, 6} **Range** {–3, 6, –1} don't write 6 twice

2. **To find the domain and range of a graph..**



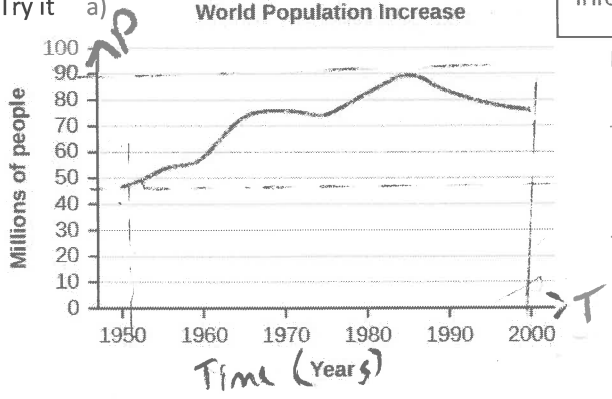
To find the domain, look only at the **x values**. What x values are part of the graph (even part of the graph were it to extend beyond what you can see)? Try to *visualize* what are all the possible x values of the graph? → has arrow

In the example to the left, the graph starts at -5 (there's a dot). So no x values less than –5 are possible. But then the graph continues to the right and has an arrow. That means the graph continues to infinity. Look ONLY at the x-values. You can see that after -5, ALL x values are in the graph. All real numbers starting at -5 and up can be found on the graph. We can write the domain informally as {x≥–5} {x ≥ –5}

Similarly, for the **range**, now look at **y-values**. Visualize what are all the possible y values that could be on the graph?

We can see that y starts at 6 (at the dot) and then the numbers get smaller. We can write the range informally as {y ≤ 5}.

Try it a)



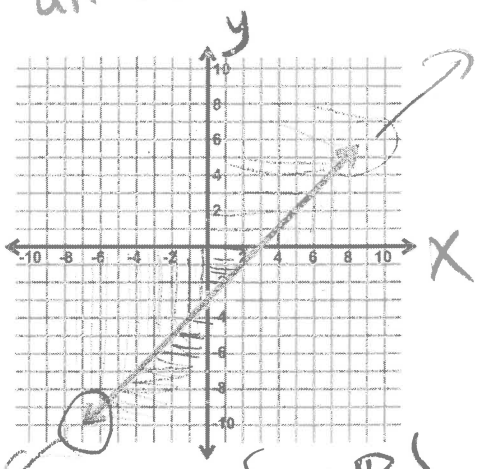
Domain: horiz. axis {1950 ≤ t ≤ 2000}

Range: vertical axis {45 ≤ p ≤ 90}

Dom $\{x \in \mathbb{R}\}$ (is an element of; real numbers)

all real numbers

b)



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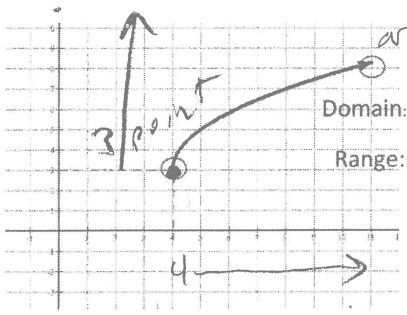
Range $\{y \in \mathbb{R}\}$

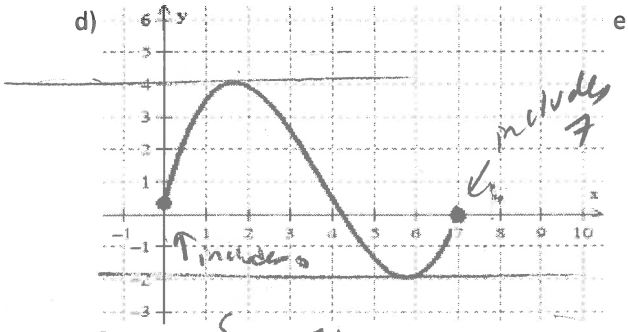
c) Find the domain and range for the following function



Domain: $x \geq 4$

Range: $y \geq 3$

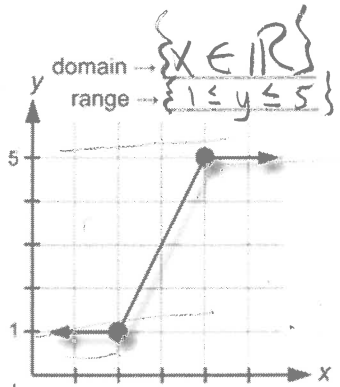
d)

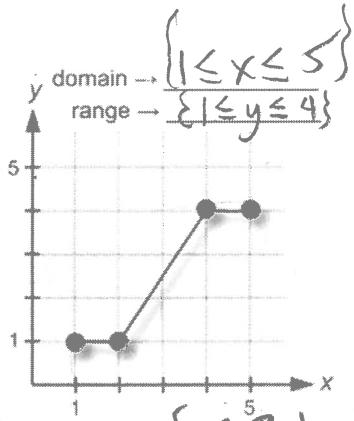


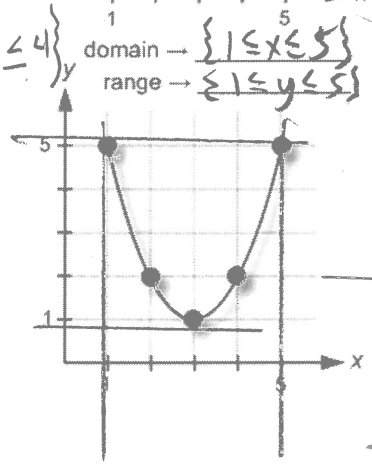
Dom $\{0 \leq x \leq 7\}$

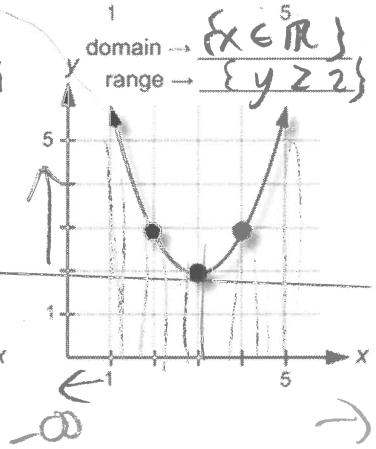
Range $\{-2 \leq y \leq 4\}$

e)

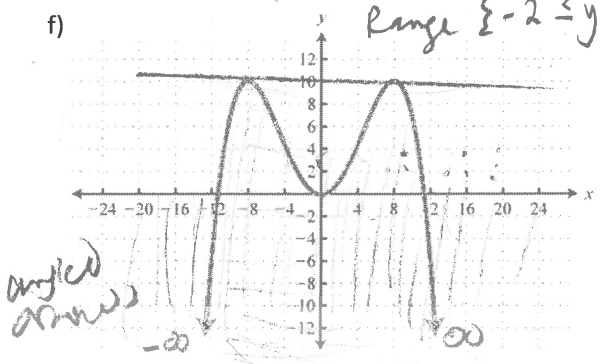








f)



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Dom $\{x \in \mathbb{R}\}$

Range $\{y \leq 10\}$